AuroraDuet

Short User Guide

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Contents

AuroraDuet **Short User Guide**

This *Short User Guide* contains brief information on how to set up and use your **Aurora**Duet. Further information is available:

- The main **Aurora**Duet *User Guide* contains comprehensive information on all aspects of **Aurora**Duet. It is supplied on CD as an Adobe Acrobat file, for information on how to view this file see the section below.
- You can display context-sensitive help on the screen that is displayed, for information on how to view the help, see the section below.
- For updated information, application notes and information on all Trend Communication products, visit **www.trendcomms.com**
- Email **customer.support@trendcomms.com**
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Intended Readers

Please read the safety and advice in *Before You Use* **Aurora**Duet *for the First Time* on pages 3 and 4.

If you are new to **Aurora**Duet we recommend that you read the following sections after reading this *Introduction*:

- **Section 1** Simulation - Making and Receiving Calls
- **Section 2** Testing

- **Section 4** A look at **Aurora**Duet
- **Section 5** Monitoring a Line

If you are a more experienced user you may want to read the following sections:

- **Section 1** Simulation - Making and Receiving Calls
- **Section 2** Testing
- **Section 3** Sending data to a PC or Printer
- **Section 5** Monitoring a Line

Section 6 Menutrees and **Section 7** Troubleshooting may be useful to all users.

Viewing the **Aurora**Duet **User Guide**

-1- Place the CD in the CD-ROM drive of your PC. The CD automatically runs.

-2- Follow the instructions displayed on the screen to view the *User Guide*.

If the CD does not run automatically:

-1- Use Windows Explorer to display the contents of the CD.

-2- Double-click on **Start.exe**.

-3- Follow the instructions displayed on the screen to view the *User Guide*.

Displaying Help on **Aurora**Duet

-1- Press *F1* **HELP** to display the **STATUS** screen, then press *F4* **HELP**.
Help text for the current screen is displayed.

Introduction to **Aurora**Duet

AuroraDuet is a hand held tester which enables you to install, configure, troubleshoot and maintain ISDN equipment and lines. It provides a full suite of physical layer and ISDN tests which allow you to quickly verify the service or perform in-depth and specialist analysis.

AuroraDuet can be used to test ISDN links on both the S and U interfaces. It may also be fitted with an optional Primary Rate Interface (PRI), which lets you test the ISDN PRI at the 'T' reference point.

Before You Use **Aurora**Duet for the First Time

You must make sure that the Nickel-Cadmium battery is fully charged before using **Aurora**Duet for the first time.

Caution

Only recharge the battery pack supplied with **Aurora**Duet. *Use only the supplied adaptor/charger - if you use any other adaptor/charger you may damage the tester or the battery.*

-1- Plug the adaptor/charger into the mains electricity (AC) supply and connect this to **Aurora**Duet's *DC* supply socket.

Note

The location of the *DC* supply socket is indicated in *Communications Ports and Connectors* in Section 4.

AuroraDuet may be switched on and used while the battery pack is being recharged. The *BATT* LED is lit ***GREEN*** when the battery pack is fast charging.

-1- Continue charging the battery pack until it is fully charged.
The battery pack takes approximately 2 hours to fully recharge. When the batteries are fully charged and you disconnect the mains adaptor, all blocks on the battery charge indicator on the Main menu are highlighted.

-2- When charging is complete, switch off the mains power source and disconnect the adaptor/charger.
It is safe to leave the charger connected for longer periods even when the battery pack is fully recharged.

Safety

When using **Aurora**Duet, *always take basic safety precautions to reduce the risk of fire, electric shock and injury to persons. These include the following:*

- *Do not open the back of the unit while it is switched on or connected to the network.*
- *Use only the batteries indicated in the main* **Aurora**Duet *User Guide. These are described in Chapter 2 Section 1 of the main* **Aurora**Duet *User Guide.*
- *Do not dispose of batteries in a fire - they may explode. Check with local codes for possible special disposal instructions.*
- *Avoid using the tester during an electrical storm - there is a risk of electric shock from lightning.*

Warning: High voltage

- *Do not connect the 'S' cable to the 'S Test' connector.*
- *When there is a cable attached to either of the 'U' connectors, do not connect the 'S' cable to the unit.*

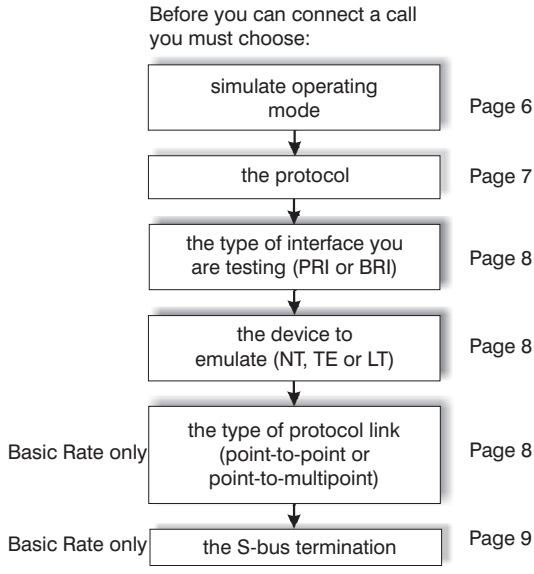
Section 1 Simulation - Making and Receiving Calls

AuroraDuet operates in two different modes:

ISDN Simulate in this mode you can make calls by emulating equipment on the line: e.g. Terminal Equipment (TE), a Network Termination (NT) or ISDN Line Termination (LT).

Monitor in this mode you can monitor signalling traffic on the line or listen to audio calls.

In this example we assume that you want to make and receive calls on an ETSI network and that you are testing on a 'S' interface or primary rate interface. For information on monitoring see Section 5 *Monitoring a Line*. For information on other protocols and interfaces see the main **Aurora**Duet *User Guide*.



Switching on **Aurora**Duet

- Push the *ON/OFF* switch momentarily in an upwards direction.
  The *ON/OFF* switch is located on the right-hand side of the tester.

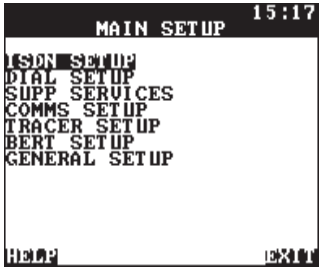
AuroraDuet begins to boot up. First, it checks the flash memory where **Aurora**Duet's internal code is stored - **Aurora**Duet displays **Checking Flash Memory**.

Changing to Simulate Mode

If **Aurora**Duet is in monitor mode you must select simulate mode (if **Aurora**Duet is already in simulate mode, ignore this step):

-1- From the **MONITOR MENU**, choose **ISDN SIMULATE**.
AuroraDuet displays a screen to indicate that it is reconfiguring itself - this may take a few moments. The operating mode is selected and the main menu is displayed.

-2- Choose **SETUP** from the Main menu.
The **MAIN SETUP** menu is displayed.

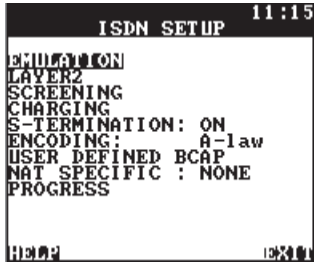


Choosing the Protocol

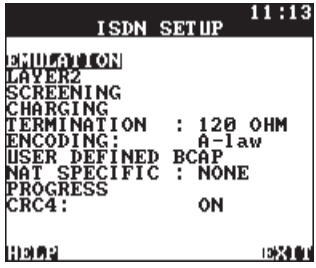
Before you can start testing you must choose, on **Aurora**Duet, the protocol of the line you are going to test:

-1- Choose **ISDN SETUP**.
The **ISDN SETUP** menu is displayed.

BRI

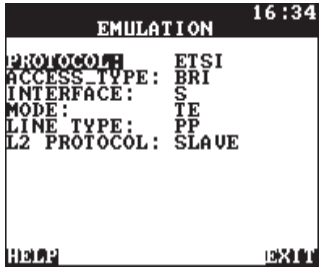


PRI

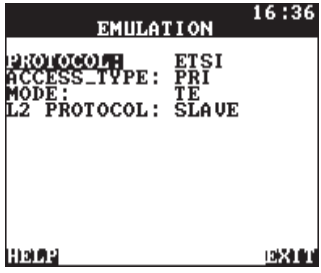


-2- Choose **EMULATION**.
The **EMULATION** menu is displayed.

BRI



PRI



-3- Highlight **PROTOCOL**.

-4- Use the *LEFT* and *RIGHT* arrow keys to choose a protocol, in this case **ETSI**.

Choosing Basic or Primary Rate

If both Primary Rate (PRI) and Basic Rate interfaces are fitted to your **Aurora**Duet you must choose between them:

-1- Highlight **ACCESS_TYPE** in the **EMULATION** menu.

-2- Use the *LEFT* and *RIGHT* arrow keys to choose **PRI** (Primary Rate) or **BRI** (Basic Rate).
The *BRI* or *PRI* LED lights up, depending on your selection.

Choosing the Device to Emulate

You need to identify the type of device which **Aurora**Duet is going to emulate at the selected interface. This automatically determines whether **Aurora**Duet generates or receives the network clock at Layer 1.

-1- Highlight **MODE** in the **EMULATION** menu.

-2- Using the *LEFT* and *RIGHT* arrow keys, toggle between the available options.
The *TE* or *NT / LT* LED lights up, depending on your selection.

The options are as follows:

Termination Settings	
TE	Terminal Equipment. **Aurora**Duet acts as the network clock receiver at Layer 1.
NT	Network Termination. **Aurora**Duet acts as the network clock generator at Layer 1. On the U interface, auroraDuet acts as the network clock receiver at Layer 1.
LT (BRI)	Line Termination (U interface). **Aurora**Duet acts as the network clock generator at Layer 1.

Selecting the Type of Protocol Link (BRI)

When you are testing a Basic Rate link that uses ISDN protocol support (that is not a fixed link) you must specify whether you intend to test an ISDN point-to-point (PP) link or a point-to-multipoint (PMP) link:

-1- Highlight **LINE TYPE** in the **EMULATION** screen.

-2- Use the ***LEFT*** and ***RIGHT*** arrow keys to choose one of the following options:

Line Type	
PP	Test a Point to Point line, where one TE is connected at the end of the cable
PMP	Test a Point to Multipoint line, where up to eight terminals can be connected in parallel along the bus

Terminating the S Bus BRI

On a Basic Rate link the S bus must be terminated with 100Ω at either end. This is normally done by the NT and the most distant socket on the bus.

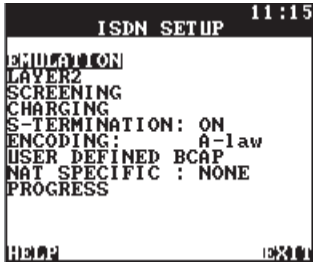
When you are using **Aurora**Duet for simulation on the S interface, you must switch its 100Ω termination resistor on or off, depending on the device **Aurora**Duet is emulating and the other equipment on the link. When **Aurora**Duet is emulating an NT, the resistor must always be **ON**.

Only one socket on the interface can have the S bus termination connected at any one time. Therefore, when you emulate a TE on a line where there are other TEs, check whether one of the other TEs has a termination resistor. If so, you must switch **Aurora**Duet's resistor **OFF**; if not, you must switch **Aurora**Duet's resistor **On**.

Tip

Also check the NT to see if the termination resistor is switched or linked in or out. The NT has two termination resistors - one for the NT end and one for the terminal end. When the terminal end is directly connected, the terminal end resistor can be switched in or out (or linked in the NTE6).

-1- On the **EMULATION** screen, press *F6* **EXIT**.
The **ISDN SETUP** menu is displayed.



-2- From the **ISDN SETUP** menu, highlight **S-Termination**.

-3- Using the *RIGHT* and *LEFT* arrow keys, choose either **OFF** or **ON**.

-4- Press *F6* **EXIT**.
The main menu is displayed.

Setting up **Aurora**Duet **using Hot Keys** Simulate

AuroraDuet provides Hot Keys, which allow you to configure the unit automatically, at the touch of a button.

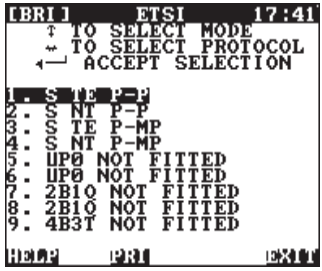
The Hot Keys available depend on how your unit is set up.

If you try to select a configuration which is not available, a message is displayed next to the Hot Key indicating why you cannot select it, for example **Up0 NOT FITTED**.

Displaying the Hot Keys

-1- In the **MAIN** menu, press the *F4* **HOT** function key. The **HOT KEYS** menu is displayed.

BRI



PRI

Switching between BRI and PRI

To toggle between the hotkeys for BRI and PRI modes.

-1- Press *F3*.

Choosing a Hot Key Configuration

-1- Use the *UP* and *DOWN* arrow keys to highlight the configuration you want.

-2- Press *SELECT*.
AuroraDuet resets itself to the chosen configuration, displaying the message **CONFIGURING SIMULATE PLEASE WAIT**. The Main menu is then displayed.

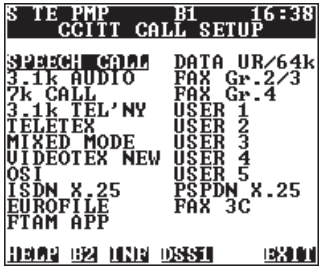
Exiting without Making a Selection

-1- To exit from the **Hot Keys** menu without making any changes, press *F6*.

Making an Outgoing Call

Before you can make a call you must choose the type of call you want to make and enter the number you want to connect to.

-1- From the main menu choose **ISDN CALL SETUP**.
The **ISDN CALL SETUP** menu is displayed



-2- Highlight the service you want to use and press *SELECT*.

-3- Using the *UP* and *DOWN* arrow keys, highlight **CALLED PARTY NUMBER**.

-4- Type the number you want to call.

-5- Using the *UP* and *DOWN* arrow keys, highlight **DIAL**.

-6- Press *SELECT*.
AuroraDuet dials the CPN.

Clearing a Call

When you want to end a call

-1- Using the *UP* and *DOWN* arrow keys, highlight **CLEAR CALL** and press *SELECT*.
The call is cleared.

Answering an Incoming Call

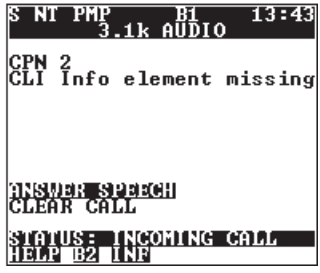
The way incoming calls are connected on **Aurora**Duet depends on whether they are data or voice calls.

Voice Calls Incoming voice calls must be answered manually

Data Calls ncoming data calls are answered automatically by **Aurora**Duet

Answering a Voice Call

When an incoming voice call is received the ringer sounds and a screen similar to the following is displayed:



The top of the screen shows the bearer capability. The **status** line, at the bottom of the screen, displays **incoming call**.

The Called Party Number (CPN) is displayed, together with the Calling Line Identity (CLI), if present in the incoming call setup.

To answer the call:

-1- Highlight **ANSWER SPEECH** and press *SELECT*.
The call is answered and the Call menu is displayed.

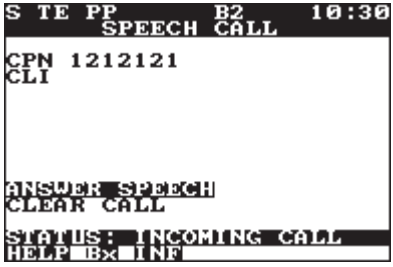
Incoming Calls on a Background Channel

If an incoming voice or data call is received on a channel other than the one currently selected, the *F2* (channel selection) function key flashes to alert you to the call. With voice calls the ringer also sounds.

Answering a Voice Call on a Background Channel

BRI

-1- Press *F2* **B1** or **B2**.
A screen similar to the following is displayed.

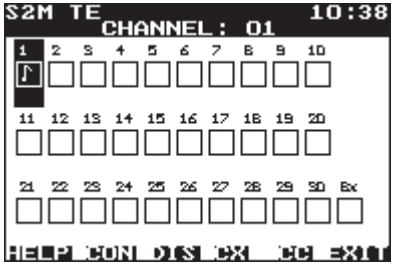


-2- Highlight **ANSWER SPEECH** and press *SELECT.*

Answering a Voice Call on a Background Channel

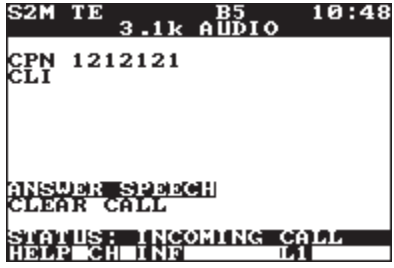
PRI

-3- Press *F2* **CH**.
The **CHANNEL** activity screen is displayed.



4. Move the cursor to the channel that the incoming call is on ( ).

5. Press *SELECT*.
   A screen similar to the following is displayed.



6. Highlight **ANSWER SPEECH** and press *SELECT*.

Section 2 Testing

This section describes some of the tests you can perform using **Aurora**Duet, how to set up the tests and how to perform them.

Connecting to the ISDN

AuroraDuet can connect to the ISDN on the S or U interfaces for Basic Rate testing or, if the PRI option is fitted, to the E1 interface for Primary Rate testing.

Warning: Connecting to the line

Take care when connecting **Aurora**Duet to the line, as high voltages may be present on some telecommunication lines.

For further information on safety see *Safety* in the *Introduction* of this *Short User Guide*.

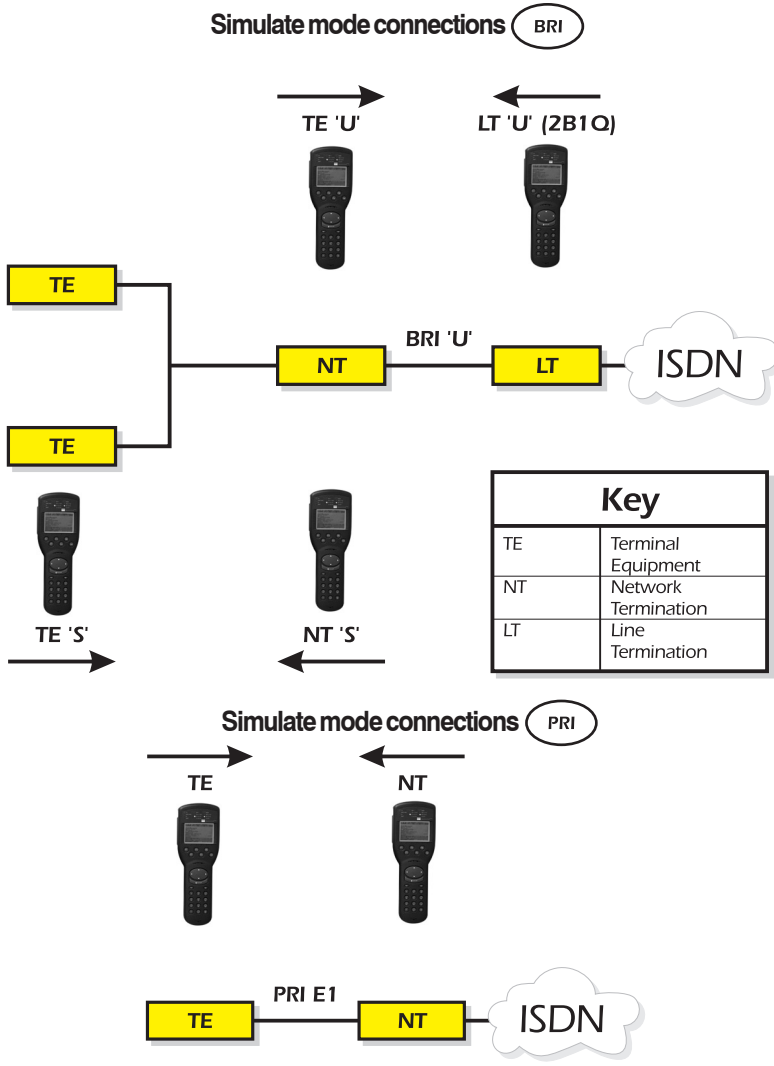
AuroraDuet's interface connectors are located on the top of the unit. See *Communications Ports and Connectors* in section 4.

-1- Connect the appropriate cable to **Aurora**Duet and the equipment under test.

Note

An RJ-45 'T' piece is supplied for monitoring on an S Bus. This must be used in conjunction with the EMC RJ-45 extender lead by first plugging the extender lead into the **Aurora**Duet RJ-45 socket and fitting the 'T' piece into the end of the extender lead.

The following diagrams show the points on the ISDN where you can connect **Aurora**Duet for simulation.



Testing Service Availability

The following explains how to test the availability of telecommunications services for ISDN calls.

You can check that an individual bearer service or teleservice is available by connecting a call using that service. However, when you need to check the availability of more than one ISDN teleservice, the quickest and easiest method is to perform a Service Test.

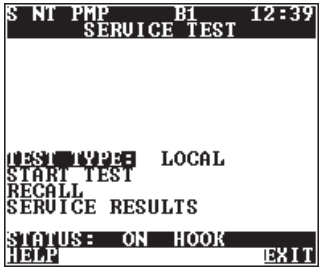
How the Service Test Works

The Service Test checks the ISDN services subscribed to on the line under test, and tells you which ones are available. It does this by initiating a series of calls which use all of the bearer capabilities for the current protocol, in turn. A call is made on the selected B channel for each of the supported bearer capabilities, Higher Layer Compatibility or Service Indicator Code values.

When the test is complete, the results indicate which services the link is configured to carry. Service test results are stored even when **Aurora**Duet is switched off.

Setting up a Service Test

-1- Choose **SERVICE TEST** from the **AUTOTEST** menu. The following screen is displayed:



Choosing a Local or Distant test

To select the type of service test:

-1- Highlight **TEST TYPE** and, using the *LEFT* and *RIGHT* arrow keys, choose either **LOCAL** or **DISTANT**:

Service Test Type	
Local	This tests the acceptance of calls at the device to which **Aurora**Duet is connected - for example, your local exchange.
Distant	This tests the acceptance of calls at all points over the ISDN network.

Note

The results of **Local** tests cannot be guaranteed, due to different network setups.

Entering the number to dial for the test

If you choose a **Distant** test, a **CALLED PARTY NUMBER** line is displayed.

To change this or add a CPN:

-1- Enter a CPN of up to 20 digits.

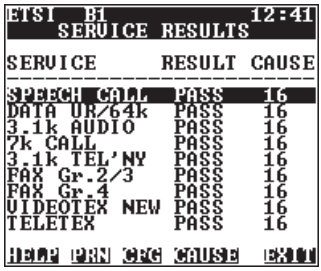
Starting the Service Test

After you have set up the parameters for the Service Test, begin the test as follows:

-1- Choose **START TEST**.
The test begins. After each service is tested, **Aurora**Duet displays whether a channel has passed or failed the test. When the Service Test is complete, the **SERVICE RESULTS** screen is displayed.

Note

You can also display Service Test results by selecting the **SERVICE RESULTS** option in the **SERVICE TEST** screen.



-2- Use the *UP* and *DOWN* arrow keys to scroll through the results.

Understanding Service Test Results

The **RESULT** column shows whether the service is available or not.

PASS Indicates the ISDN service is available

FAIL Indicates the ISDN service is unavailable.

A cause code is display to the right of each service in the **CAUSE** column. To display the cause code description:

-1- Highlight the appropriate line and press *F4* **CSE**. Press *F6* to exit from the cause code description.

Notes

- If a test fails with an internal call cause code, all further tests are aborted. **FAIL** is displayed against each test, together with a cause code of 0.
- If you press *F6* during a test, all further tests are aborted after the current call has cleared. **FAIL** is displayed against the remaining tests, together with a cause code of 0. The status line displays **SERVICE TEST STOPPING**.

Channel Testing

The following explains how to test the availability and configuration of the B channels for ISDN calls.

Although you can check that a channel is available for calls against a single ISDN bearer service by connecting a call using the appropriate service, the simplest way to perform a complete channel check is to perform an Outgoing Channel test or a Full Channel test:

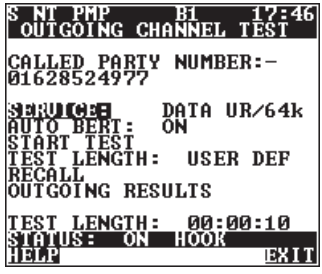
The **OUTGOING CHANNEL TEST** determines channel availability. It does this by establishing and clearing an outgoing call on each B channel in turn. You can also run a BER test on data calls.

The **FULL CHANNEL TEST** tests the configuration of the B channels. It does this by establishing a call on each B channel, until all channels have an active call. The calls are then cleared down in the order in which they were established. You can also run a BER test on data calls.

Setting up a Channel Test

Both the Outgoing Channel test and Full Channel test are set up as follows:

-1- Choose **OUTGOING CHANNEL TEST** or **FULL CHANNEL TEST** from the **AUTOTEST** menu.
A screen similar to the following is displayed:



Selecting the bearer service

First, select the bearer service for the test calls:

-1- Highlight **SERVICE** and, using the *LEFT* and *RIGHT* arrow keys, choose either **DATA UR/64K** or **SPEECH**.

Performing a BER test

You can perform a BER test on each channel, if you have chosen the **DATA UR/64K** bearer service:

-2- Highlight **AUTO BERT** and select **ON** to run a BER test.

-3- To specify the duration of the BER test, highlight **TEST LENGTH** and select 1 minute, 10 minutes, 1 hour or user defined. For details on specifying a user defined BER test length, see *Setting up BERT Operation* in the main **Aurora**Duet *User Guide*.

Entering the number to dial for the test

The last CPN dialled is displayed. To change this or enter a new CPN:

-1- Input the digits using the keypad. Enter a CPN of up to 20 digits.
If you make a mistake, use the *LEFT* arrow key to erase the last digit.
The digits you enter are displayed below **CALLED PARTY NUMBER**.

Selecting a previously stored CPN

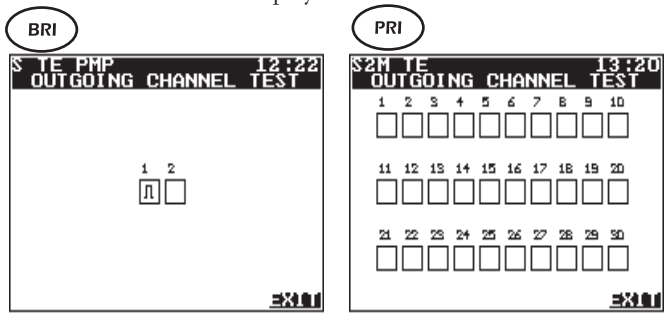
-1- Highlight **RECALL** and press *SELECT*.
The **CPN DIRECTORY** or **RECALL** screen is displayed.

-2- Choose a number to dial and press *SELECT*.

Starting the Channel Test

Once you have set up the parameters for the Channel Test, begin the test as follows:

-1- Choose **START TEST**.
The test begins and a screen similar to the following is displayed:



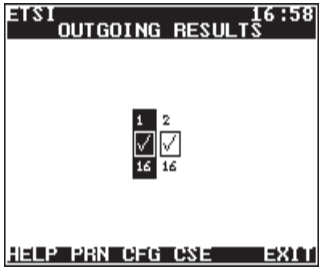
Each box represents a B channel: two for basic rate; 30 for primary rate.

As each channel is tested, the corresponding box is highlighted and a symbol is displayed:

- ☎ is displayed when a **SPEECH** call is performed.
- ▪ is displayed when a **DATA UR/64K** call is performed. If **AUTO BERT** is **ON**, a BER test is performed when the call is connected.

Understanding Channel Test Results

When all channels have been tested, the test ends and the **OUTGOING RESULTS** or **FULL RESULTS** screen is displayed. For example:



Note

You can also display channel test results by selecting the **OUTGOING RESULTS** or **FULL RESULTS** option on the **OUTGOING/FULL CHANNEL TEST** screen.

AuroraDuet indicates whether a channel has passed or failed the test. The following symbols are used:

✓ The call has passed

✗ The call has failed. The cause code is displayed underneath.

A blank box indicates the channel could not be tested because a call was already active on the channel - the cause code is displayed underneath.

To display a cause code description:

-1- Highlight the channel and press *F4* **CSE**.
Press *F6* to exit from the cause code description.

Multi-Channel BERT

You can perform a Multi-Channel BERT when you are testing either a PRI or a BRI line.

You can select an even number of channels between 2 and 30. Calls are established on the currently selected channel and the BERT starts when calls have been established on all the selected channels.

You cannot perform a Multi-Channel BERT if your **Aurora**Duet is connected to another tester, it must be connected to a network.

Notes

When you start a Multi-Channel BERT all current calls are cleared. If less channels than specified are available, the BERT is connected to the last available channel.

Performing a Multi-Channel BERT

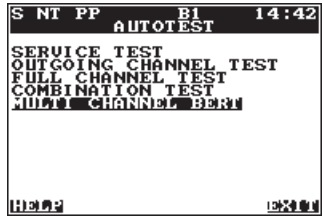
-1- Choose the channel to be tested.
For more information see Chapter 4 section 1 of the main **Aurora**Duet *User Guide*.

Note

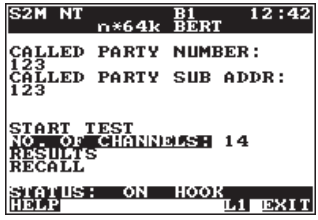
AuroraDuet selects the currently selected channel.

-2- Choose **AUTO TEST** from the Main menu.

-3- Use the *UP* or *DOWN* arrow keys to choose **MULTI CHANNEL BERT**.

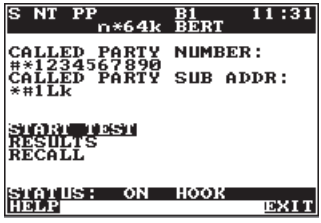


4. Use the *UP* or *DOWN* arrow keys to choose **NO. OF CHANNELS**.
5. Use the *LEFT* or *RIGHT* arrow keys to choose an even number of channels between 2 and 30.

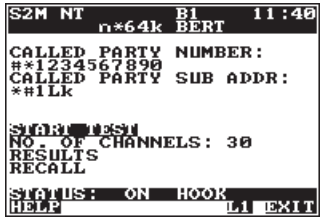


6. Use the *UP* or *DOWN* arrow keys to choose **START TEST**.

BRI

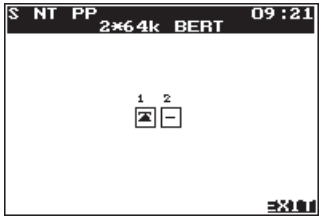


PRI

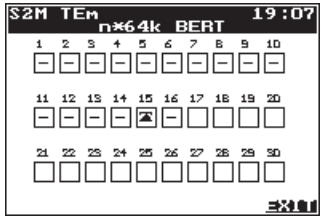


A progress screen similar to the following is displayed briefly as **Aurora**Duet establishes a connection to each channel.

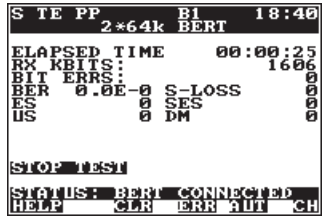
BRI



PRI



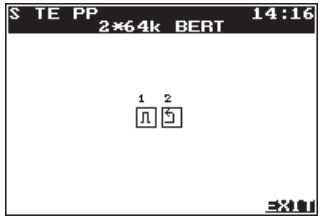
If the call is successfully established the BER results menu is displayed.



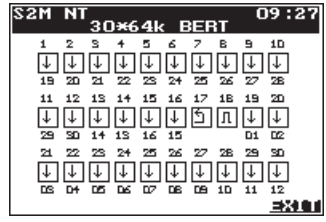
Tip

You can toggle between the BER menu screen and the channel menu screen by pressing *F6 CH*.

BRI



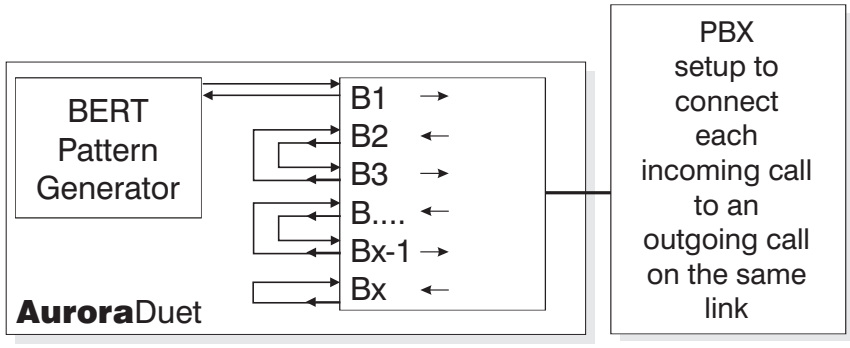
PRI



The channel screen displays the progress of the BERT.

Note

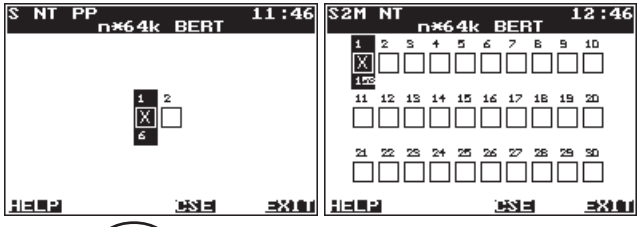
The PBX must be setup to connect each incoming call to an outgoing call on the same line.



AuroraDuet starts the test sequence by making the first call on the currently selected B channel, or the first available channel. When all possible calls have been established, **Aurora**Duet cross-connects the incoming and outgoing calls. The final incoming call is looped and connects all available channels. The BERT is then connected to the channel used in the initial call.

If no calls are established the results menu will be shown immediately.

BRI PRI



BRI If a call is not established on the selected channel, **Aurora**Duet does not attempt to establish a call on the other channel.

Section 3 Sending Data to a PC or Printer

Connecting **Aurora**Duet to a PC or Printer

You can connect **Aurora**Duet to a PC so that you can:

- download test results or decode a terminal emulation application
- download a trace to **Aurora**Expert for Windows
- operate **Aurora**Duet using Remote Control (for further information see Chapter 7 of the **Aurora**Duet *User Guide*)

To connect the supplied RS232 cable to **Aurora**Duet's communications port:

-1- Grasp the handles on either side of the RS232 connector and press together.
The clip expands, as shown in the following diagram:

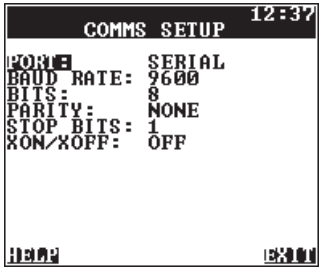
-2- Align the connector with the communications port, and release the clips, so that the RS232 connector grips on to the comms port.

-3- Now attach the other end of the RS232 cable to the PC or printer.

Configuring **Aurora**Duet's Communications Port

Before you sent data to a printer or PC you must set up the comms port on **Aurora**Duet to communicate with your PC.

-1- Choose **COMMS SETUP** from the **MAIN SETUP** menu. The following screen is displayed:



-2- Highlight **PORT** and use the *LEFT* and *RIGHT* arrow keys to choose **SERIAL**.

-3- Highlight **BAUD RATE** and use the *LEFT* and *RIGHT* arrow keys to choose a baud rate to match what you have set on your PC.

-4- Highlight **BITS** and use the *LEFT* and *RIGHT* arrow keys to choose **7** or **8**.

-5- Highlight **PARITY** and use the *LEFT* and *RIGHT* arrow keys to choose **NONE**, **ODD** or **EVEN**.

-6- Highlight **STOP BITS** and use the *LEFT* and *RIGHT* arrow keys to choose **1** or **2**.

-7- Highlight **XON/XOFF** and use the *LEFT* and *RIGHT* arrow keys to choose **ON** or **OFF**.

Printing Test Results to the Comms Port

To print Service or Channel Test results to the communications (comms) port:

-1- Connect **Aurora**Duet to a printer.

-2- Press *F2* **PRN.**

Note

The results of each BER test are automatically printed to the RS232 port when the Tracer is set to **RESULTS TO COMMS** and **AUTO BERT** is **ON**. The results are stored if **Aurora**Duet is powered off.

Downloading Decode via the Comms Port

To send the protocol decode to **Aurora**Duet's communications (comms) port for output to a PC or printer.

-1- Connect **Aurora**Duet to a PC or printer

Tip

You may find it useful to print out information about **Aurora**Duet's current configuration with the protocol decode. To do this, press *F1* **Help** then *F1* **PRN**.

Downloading the Decode in Full

Full decode consists of a partial decode of Layer 2 and Layer 3 signalling with a full hexadecimal dump of the D Channel messages. It also includes a Tx/Rx indicator, time stamp and frame reference number.

To send the protocol decode to the comms port, in full:

Monitor

-1- Choose **PRINT FULL DECODE** from the **MONITOR REVIEW** menu.

Simulate

-2- Choose **PRINT FULL 'D' DECODE** from the **TRACE CAPTURE REVIEW** menu.

A screen is displayed which contains a bar graph to indicate the time taken to download, in a percentage format.

Downloading the Decode in Simple Form

Simple decode consists of the message type, direction and timestamp. To send the protocol decode to the comms port, in simple form:

Monitor

-1- Choose **PRINT SIMPLE DECODE** from the **MONITOR REVIEW** menu.

Simulate

-2- Choose **PRINT SIMPLE 'D' DECODE** from the **TRACE CAPTURE REVIEW** menu.
A screen is displayed which contains a bar graph to indicate the time taken to download, in a percentage format.

Downloading Decode to **Aurora**Expert

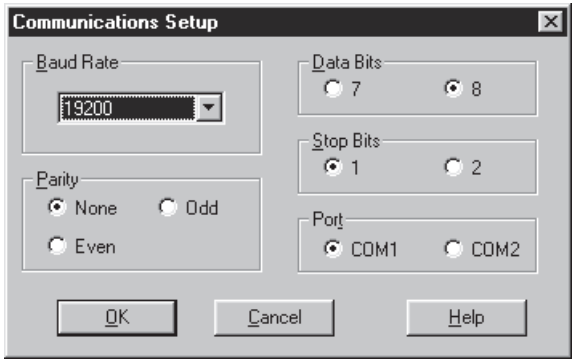
You can download protocol decode to a PC running **Aurora**Expert for Windows. This enables you view downloaded decode.

Setting up the PC Communications Port for **Aurora**Expert

Before you start looking at data in **Aurora**Expert for Windows, you must configure **Aurora**Expert for Windows so that it is compatible with the **Aurora**Duet that you are going to use.

-1- Start **Aurora**Expert for Windows.

-2- In **Aurora**Expert for Windows display the **Setup** menu and choose **Communications**.
The following dialog box is displayed:



-3- Click on the dropdown box, below **Baud Rate**, to display the available options.
You can choose one of **1200, 2400, 4800, 9600, 19200** or **56700**.

-4- Choose the baud rate you want to use.

-5- Click on the appropriate radio button for each of the **Parity, Data Bits, Stop Bits** and **Port** options.

Parity
Set this to **None**

Data Bits
Set this to **8**.

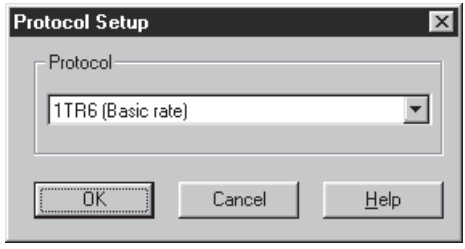
Stop Bits
Set this to **1**.

Port
Choose the COM port that you have connected **Aurora**Duet to.

-6- Click on **OK** to save the changes and exit.
To exit without saving any changes, click on **Cancel**.

Setting **Aurora**Expert **Protocol**

-1- Display the **Setup** menu and choose **Protocol**.
The following dialog is displayed:



-2- Click on the **Protocol** dropdown box to display the available protocols. With some protcols you can select either **Basic Rate** or **Primary Rate**; this selection does not affect the decoding. It does, however, define the filters that can be selected.

-3- Click once on the appropriate protocol using the mouse to highlight and select it.

-4- Click **OK** to save your changes and exit.
To exit without saving any changes, click on **Cancel**.

Setting up **Aurora**Duet**'s Communications Port for Aurora**Expert

For information on how to set up **Aurora**Duet, see the instructions earlier in this section. The communications port must be set to:

BAUD RATE to match the comm port of your PC

BITS	**8**
PARITY	**NONE**
XON/XOFF	**ON**

We recommend that you set the **STOP BITS** to **1**.

Sending Data from **Aurora**Duet to **Aurora**Expert

Note

You must start the **Aurora**Expert session on the PC *before* setting the Tracer on **Aurora**Duet to **EXPERT TO COMMS**. If you do not, the first initialisation message containing the start time and the version number will not be received by **Aurora**Expert.

When you set up the Tracer to **EXPERT TO COMMS**, decode is downloaded in a format compatible with Trend **Aurora**Expert for Windows.

Downloading Decode to **Aurora**Expert

To send the protocol decode to the comms port, in a form compatible with Trend **Aurora**Expert for Windows:

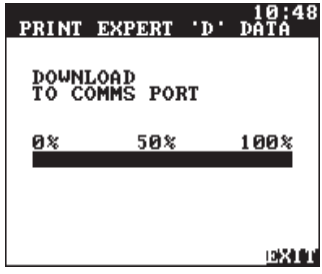
Monitor

-1- Choose **PRINT EXPERT DATA** from the **MONITOR REVIEW** menu.

Simulate

-2- Choose **PRINT EXPERT 'D' DATA** from the **TRACE CAPTURE REVIEW** menu.

A screen similar to the following is displayed:



A bar graph indicates the time taken to download, in a percentage format.

Section 4 A Look at **Aurora**Duet

The following illustration shows the controls, interfaces and connectors of **Aurora**Duet.

LED Indicators

There are eleven Light Emitting Diode (LED) status indicators grouped on the front of the BRI **Aurora**Duet and twelve on the PRI **Aurora**Duet.

The LEDs marked in white text are general or apply to the Basic Rate **Aurora**Duet; the LEDs marked in blue text apply to the Primary Rate **Aurora**Duet.

Understanding the LEDs

The LEDs have the following labels, colours and functions:

	BRI	***Green*** shows the unit is operating in the BRI mode on the S or U interface.
BRI	*U*	***Green*** shows the unit is operating on the U interface.
PRI	*L2*	***Green*** shows the presence of Layer 2.
	PRI	***Green*** shows the unit is operating in the PRI mode on the T or U interface.
	TE	***Green*** shows the unit is operating in TE emulation mode.
	NT LT	***Green*** shows the unit is operating in NT or LT emulation mode.
	MON	***Green*** shows the unit is operating in monitor mode.
BRI	*D*	***Green*** shows the presence of D channel signal with polarity logic 1 (mark) on line.
		Red shows the presence of D channel signal with polarity logic 0 (space) on line.
PRI	*RXDATA A*	***Green*** signals the presence of received data on the RXA receiver.
BRI	*B1*	***Green*** shows the presence of B1 channel signal with polarity logic 1 (mark) on line.
		Red shows the presence of B1 channel signal with polarity logic 0 (space) on line.
		Orange indicates a fairly even mixture of 1's and 0's.

BERT SYNC

Green shows a BER test is running and that pattern synchronisation has been achieved on the data call in progress.

Red is not used.

DASS DPNSS

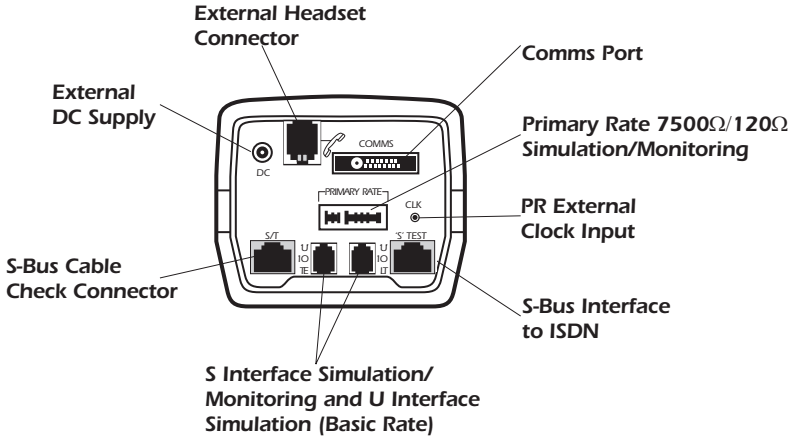
Note

If you are using the DASS2 and DPNSS protocols, the ***TE, NT and Layer 2*** LEDs behave differently, see the main **Aurora**Duet *User Guide.*

Communications Ports and Connectors

AuroraDuet's communications ports and connectors are located on the end of the unit.

The diagram below shows an **Aurora**Duet fitted with a Primary Rate Interface. The diagram may not match your particular tester - the ports and connectors depend on what options have been purchased.



The following explains the ports and connectors:

External DC Supply. Use this to connect **Aurora**Duet to an external power source using the supplied mains adaptor/ charger.

External Headset Connector. This RJ-11 socket is used to connect a telephone headset or handset. In order to meet the requirements of the EC Directive on EMC, an 'EMC handset extender cable' must be used when a handset is connected. Contact Trend Communications Ltd. or your local representative for details.

Comms Port. This is a single 15-way multi-pin connector which can be configured using a menu option to act as a high speed parallel interface or an RS232 serial port. Use this to connect to a PC, terminal or printer for remote reporting and control. Separate cables are provided for connecting to serial or parallel devices.

PRI ***Primary Rate 75Ω /120Ω Simulation/ Monitoring.*** This TAE 8 + 4 socket is used (8-part) for 'T' interface simulation/monitor functions. Various 75Ω &120Ω terminations are available - contact your Trend representative for details.

PRI ***PR External Clock Input***. Connect this 2 pin connector to a second channel receive circuit to source an external clock. **Aurora**Duet detects the presence of an external clock and overrides the internal clock.

'S' Bus cable check connector. This TAE 8 socket is used for S Bus cable checking in 'S' tests.

BRI ***'S' Interface Simulation/Monitoring & 'U' Interface Simulation.*** This TAE 8 + 4 socket is used: 8-part for 'S' interface simulation/monitor functions and 4-part for 'U' interface simulation.

'S' Bus Interface to ISDN. This RJ-45 socket is used for connection to the ISDN 'S' reference point for simulation/monitor functions. An RJ-45 'T' piece is supplied for monitoring on an S Bus. This must be used in conjunction with the EMC RJ-45 extender lead by first plugging the extender lead into the **Aurora**Duet RJ-45 socket and fitting the 'T' piece into the end of the extender lead.

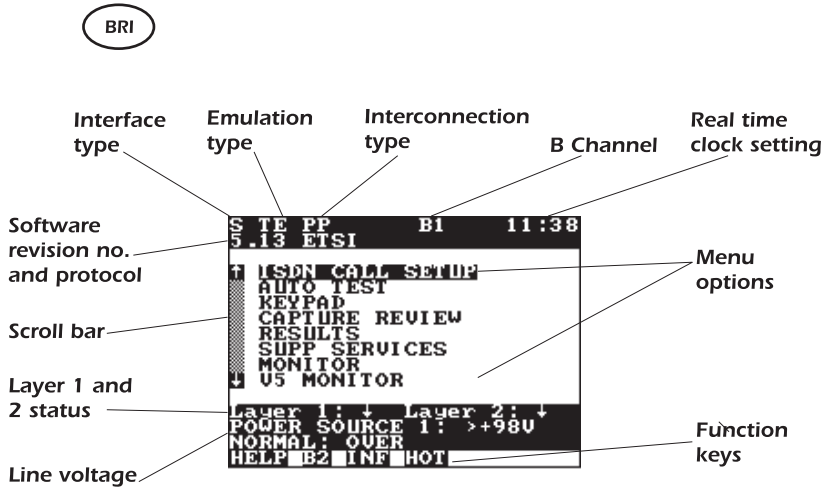
Using the Menus

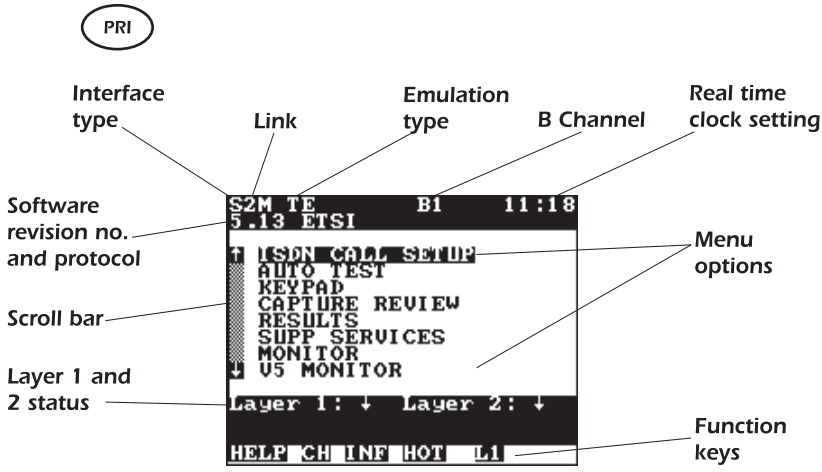
Most of **Aurora**Duet's functions are accessed via menus and sub-menus. The choices on a menu depend on the task you are performing and the protocol and interface you are using.

The Main Menu

The Main menu is automatically displayed when **Aurora**Duet is switched on and it has booted-up.

The examples below are for the ETSI protocol in Simulate mode. If you are using a different protocol, the options available may differ.





Understanding the Display

The first two lines of the Main menu display the current emulation configuration. This information is also displayed in a number of other menus.

Interface type
S indicates the S interface;
U indicates the U interface.

PRI — *Link*
Indicates a 2 Mbit PRI link.

Emulation type
Indicates the emulation type:

TE	TE slave
NT	NT master
TEm	TE master
NTs	NT slave.

BRI — *Interconnection type*

PP	Point to Point
PMP	Point to Multipoint
-	Fixed link with no protocol.

B channel

B1 Bearer channel 1
B2 Bearer channel 2
Bx Either bearer channel
PRI **Bnn** Bearer channel number where nn = a number from 1 to 30.

Real time clock — The time held by **Aurora**Duet's real time clock.

Software revision — The revision number of the software currently loaded on **Aurora**Duet.

Protocol — The currently selected protocol.

Scroll bar — Indicates there are more options than can fit on a single screen. Use the *UP* and *DOWN* arrow cursor keys to scroll through the available options.

Layer 1 & 2 status — shows the real-time status of layers 1 and 2:
↑ the layer is up
↓ the layer is down.

BRI *Line voltage* — Indicates the monitored power source. In **TE** mode this line displays **POWER SOURCE 1**, followed by the measured voltage. In **NT** mode this line displays **LINE POWER**, followed by the measured voltage.

Menu options — Lists the available menu options.

Function keys — Displays the available function keys.

Moving Through Items in a Menu

-1- Use the *UP* and *DOWN* arrow keys to move the cursor through the menu items, one at a time.

On the Main menu, a scroll bar is displayed on the left-hand side of the screen to indicate that there are more options than can fit on a single screen.

Selecting a Menu Option

-1- Move the cursor through the menu items until the one you want is highlighted.

-2- Press *SELECT* to choose the menu item.

Depending on what you have selected, **Aurora**Duet does one of the following:

- performs the task you have selected
- displays a further sub-menu.

Tip

An example menutree is illustrated at the end of this *Short User Guide*. For other menutrees, see the main **Aurora**Duet *User Guide*.

Using the Function Keys

AuroraDuet has six function keys, labelled *F1* to *F6*. Use these to carry out tasks related to the operation you are currently performing.

AuroraDuet shows the task name, in abbreviated form, at the foot of the screen, just above the key.

Note

In this Guide, function keys are indicated using bold italic text; for example, 'Press *F1* **HELP**'.

Some of the function keys are standard across menus. For example, ***F1*** usually displays on-line help and ***F6*** exits the current function.

Exiting from a Menu or Function

To exit from a menu or screen, without selecting an option:

-1- Press ***F6*** **EXIT.**
Generally, the previous menu is displayed.

Section 5 Monitoring a Line

AuroraDuet enables you to monitor protocol information on an ISDN line or to monitor audio traffic in real time. When **Aurora**Duet is monitoring it only receives data, it does not transmit.

If **Aurora**Duet is in simulate mode you must change to monitor mode:

-1- From the Main menu choose **ISDN MONITOR**.

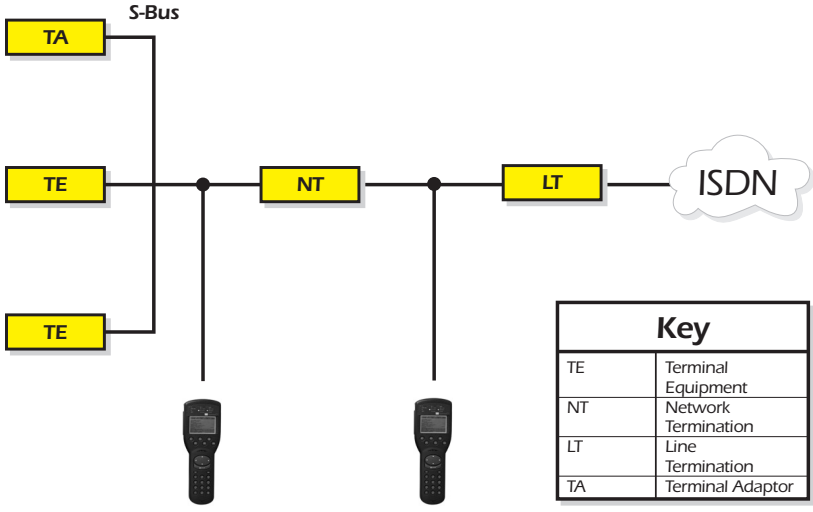
Warning: Connecting to the line

Take care when connecting **Aurora**Duet to the line, as high voltages may be present on some telecommunication lines.

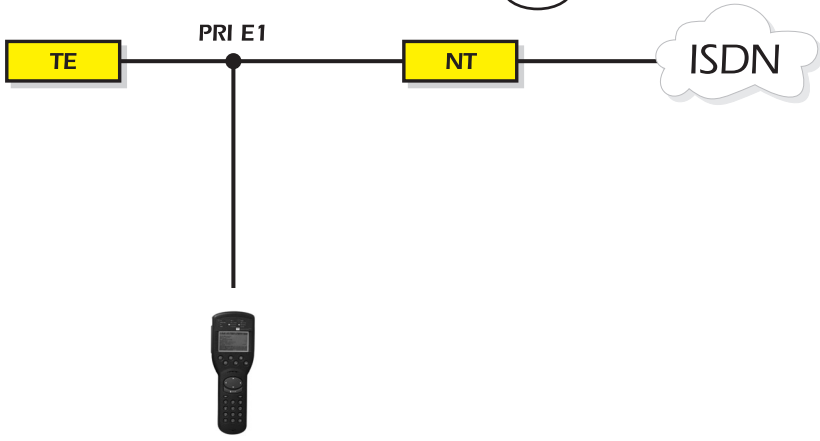
For further information on safety see *Safety* in the *Introduction* of this *Short User Guide*.

-2- Connect **Aurora**Duet to the line for monitoring.

Monitor mode connections BRI



Monitor mode connections PRI



-3- Choose **MONITOR** from the Monitor Main menu.
The **TIMESLOT MONITOR** screen is displayed.

-4- Choose the direction you want to monitor by pressing *F2* **RxA/B**.

-5- Use the arrow keys to highlight a timeslot.
The current timeslot number is displayed at the top left of the screen.

-6- Press *SELECT* to capture monitor data from the current timeslot.
The **MONITOR SESSION** screen is displayed.

-7- Enter a name for the monitor session, up to 8 characters in length.
Use the arrow keys to highlight a character and press *SELECT* to choose it. Use the keypad to enter digits. To delete a character, press *F3* **DEL**.

-8- Choose the type of monitor session by pressing *F2* **SES** from the **MONITOR SESSION** screen.

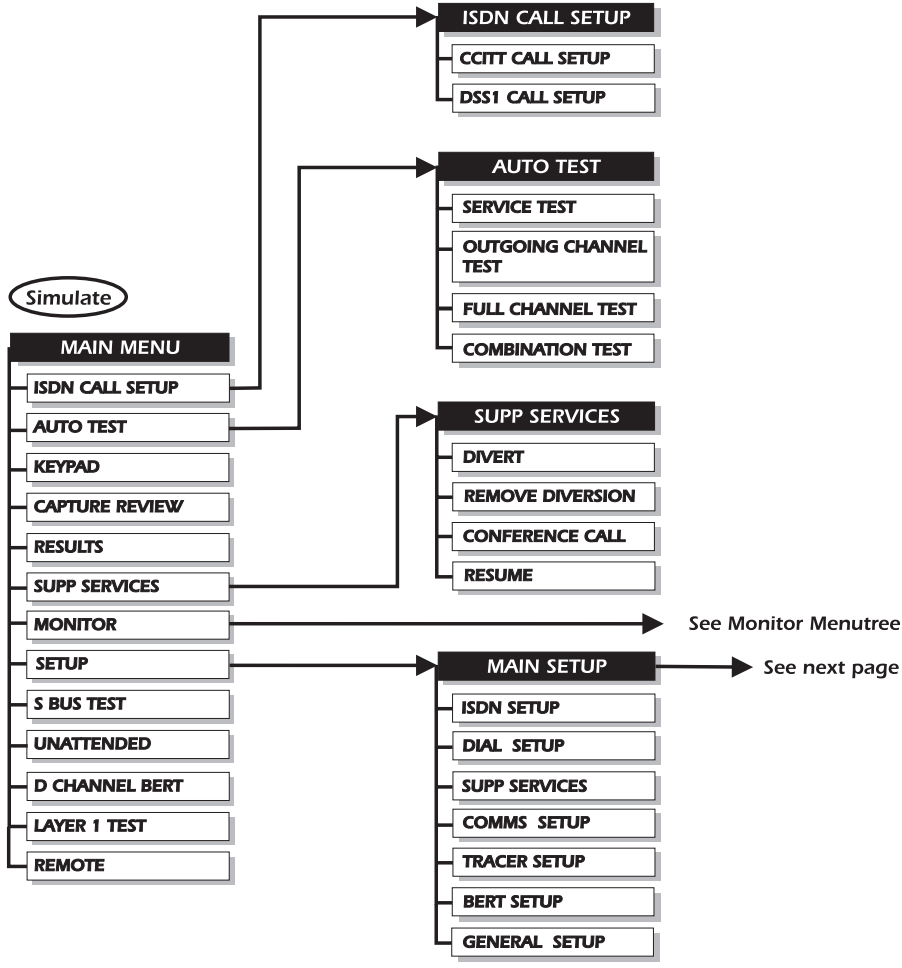
-9- Highlight **SESS TYPE** and use the *LEFT* or *RIGHT* arrow keys to toggle between **B Channel**, **C Channel** and **D Channel**.

-10- Highlight **PROTOCOL** and use the *LEFT* or *RIGHT* arrow keys to choose the protocol you want to monitor.

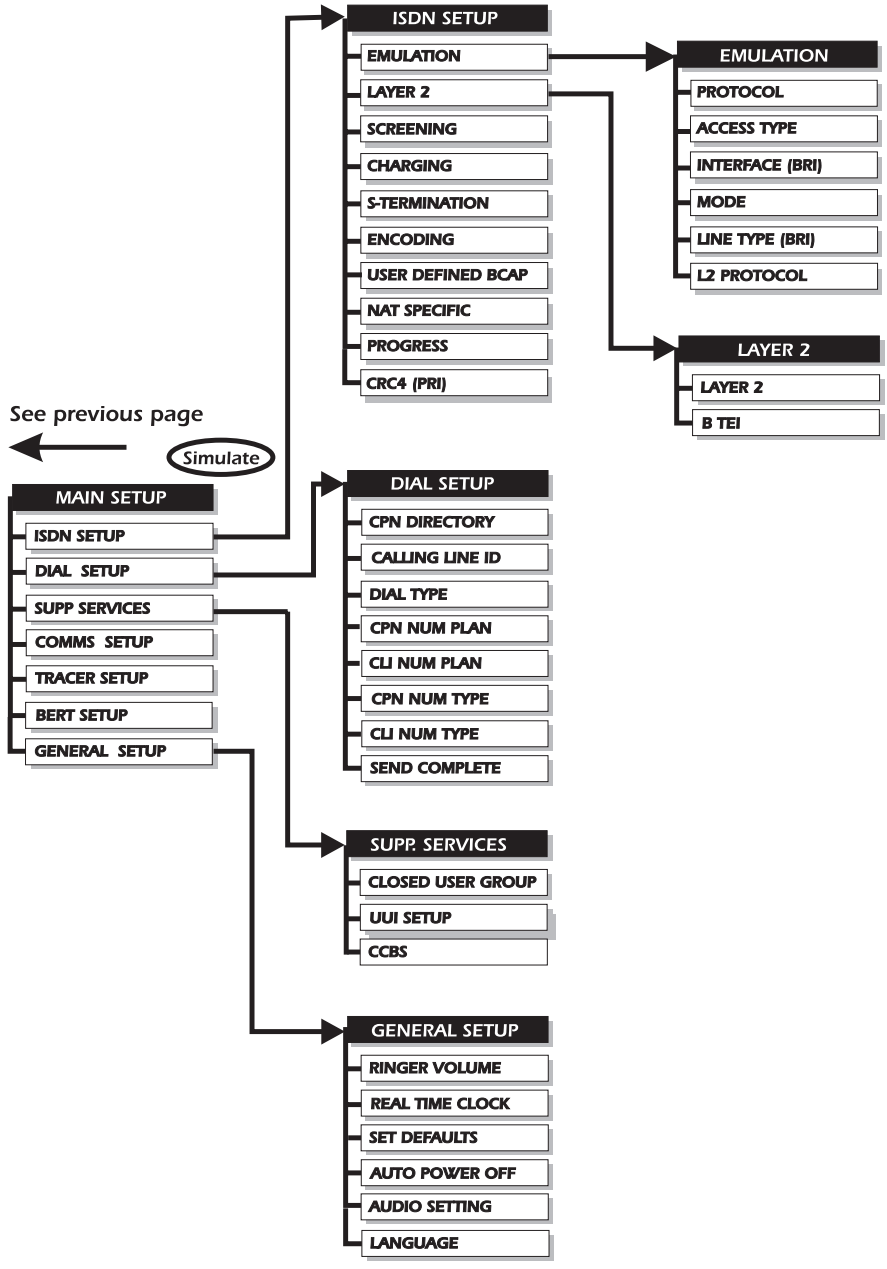
-11- Press *F5* **START** to begin the monitor session.
The monitor session begins and **Aurora**Duet displays the **DATA MONITOR** screen.

Section 6 Menu Tree - ETSI

This menu is an example of an **Aurora**Duet menu tree. For menutrees for other protocols, see *Appendix 3* in the main **Aurora**Duet *User Guide*.



ETSI SETUP Menus



Section 7 Troubleshooting

This section lists some common problems that you may encounter when you are using **Aurora**Duet and suggests some possible solutions.

Cannot connect a call.

Solutions
- make sure that the ISDN cable is correctly connected.

- is the correct interface connected on **Aurora**Duet ?

- have you dialled a valid CPN ?

- is **Aurora**Duet set up correctly, see Section 1 *Simulation-Making and Receiving Calls*.

BERT fails to pass data.

If you are running an end-to-end BERT, make sure that both BERT patterns are the same by making sure that the BERT SYNC LED is lit.

Not able to download new software to **Aurora**Duet.

If you are running field.exe from Windows, make sure that no other application is using the same Com port.

Make sure that the cable is connected to **Aurora**Duet properly.

cc88 is displayed when I make a call.

Make sure that the speech encoding method is correct.

Decode downloaded to PC is meaningless.

Make sure that the serial port on the PC has the same settings as the serial port on **Aurora**Duet.

Make sure that you have chosen the correct protocol in **Aurora**Expert for Windows.

AuroraDuet *is in simulation mode, connected to a PRI, the Layer 1 LED does not light*

Change the **CRC4** setting in the **ISDN SETUP** menu.

I do not know how **Aurora**Duet *has been set up.*

Return **Aurora**Duet to the factory default settings by choosing **SET DEFAULTS** from the **GENERAL SETUP** menu.

Note

You will loose any traces and test results stored on **Aurora**Duet.

AuroraDuet *is in simulation mode, connected to a PRI using PRI 75Ω cables, the Layer 1 LED does not light.*

Make sure that you have connected the cables correctly.

When I use **Aurora**Duet *to monitor a line all the timeslots on the* **TIMESLOT MONITOR** *screen display* '**P**'.

Make sure that you have set up the **IDLE CODE** correctly.

I cannot make a call in X.25 mode.

Make sure that you have set up the D channel TEI correctly (in the **ISDN SETUP** menu).

Before you Contact Trend Communications

If you need to contact Trend Communications with a problem please have the following information available:

- **Aurora**Duet's serial number (on a label on the back of **Aurora**Duet)
- the software version loaded on your **Aurora**Duet (displayed at the top left-hand corner of the Main menu)
- the settings you are using -
  - protocol, interface
  - whether **Aurora**Duet is emulating a TE, LT or NT
  - whether you are testing a Basic Rate or Primary Rate interface
- **Aurora**Duet's electronic serial number

Finding the Electronic Serial Number

-1- Switch on **Aurora**Duet.

-2- When the Trend logo screen is displayed, press ***F1***. The ESN is displayed.

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